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TITLE: MANUFACTURE OF CHARGE COUPLED ELEMENT

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ABSTRACT:

PURPOSE: To prevent the yield of potential pockets which are the cause of the degradation in transfer efficiency, when the charge coupled device having embedded channels which transfer the charges is manufactured in the surface of one conductive type semiconductor substrate, by bringing the concentration of arsenic ions to be implanted in the substrate to the peak value at the surface of the substrate, and performing heat treatment so that the arsenic ions are not fully activated.

CONSTITUTION: The arsenic ions are implanted into the p type silicon substrate so that the peak of the dosed ion concentration is obtained. A low

temperature oxide film is deposited. The heat treatment is performed, and an n<SP>+</SP> semiconductor layer 12 is formed. Then the oxide film is removed and an SiO<SB>2</SB> film 13 is formed. A first polycrystal silicon electrode 14 is formed thereon. Then, an exposed SiO<SB>2</SB> film 13 is etched away. Heat oxidation is performed, and a heat oxide film 15 and a gate oxide film 16 are formed on the periphery of the electrode 14 and the exposed semiconductor layer 12. The concentration of the n<SP>+</SP> type semiconductor layer 12 becomes high owing to said heat oxidation. The part, where a second electrode is formed, becomes a low concentration n type semiconductor layer 12'. When the second polycrystal silicon electrode 17, an electrode &phiv;<SB>1</SB>, and an electrode &phiv;<SB>2</SB> are formed, the stagnation of potentials is not generated even at the overlapped part of the first and second electrodes 14 and 17.

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